AUTODESK

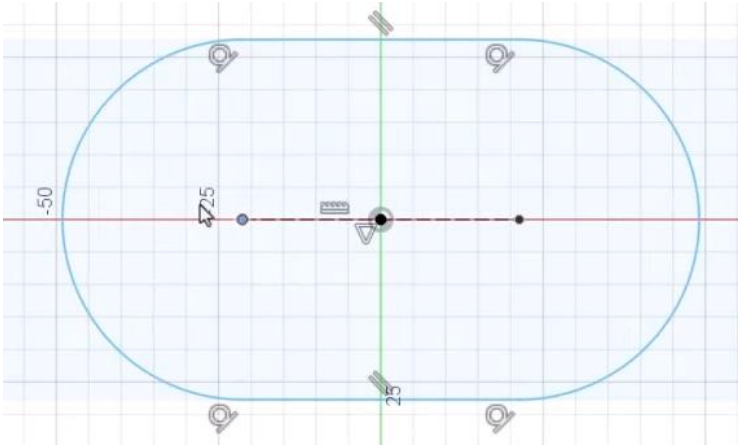
Step-by-step guide

How to create and edit a basic sketch

In this module, you'll understand some of Fusion's basics such as creating sketches and drawing lines, circles, and rectangles.

Learning objectives:

- Create a sketch.
- Edit a sketch.
- Create a sketch line.
- Create a sketch circle.
- Create a sketch rectangle.



The completed exercise

1. In Fusion, open a new untitled document. Expand the Browser's Origin folder by clicking the arrow next to it, then click the eyeball icon to make its contents visible.

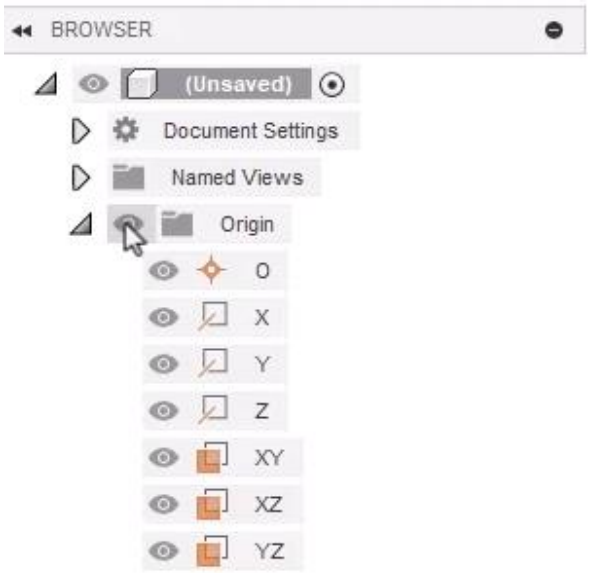


Figure 1. Inspect the Origin folder

2. By default, Fusion automatically displays an XY plane, XZ plane, and YZ plane in the Canvas area. Hovering your cursor over each of these planes will highlight them inside the Origin folder. The blue, green, and red axes represent the X, Y, and Z axes. The white circle at the intersection of the three axes represents the design's origin.

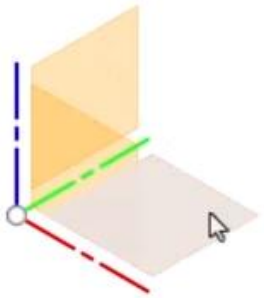


Figure 2. Inspect the design's origin

3. You could create a new sketch on one of the planes by right-clicking it in the Browser and choosing Create Sketch from the menu.



Figure 3. Note one way to create a new sketch

4. You can also create a new sketch by right-clicking one of the planes inside the Canvas area. Choose Create Sketch to create a new sketch on the plane you selected.

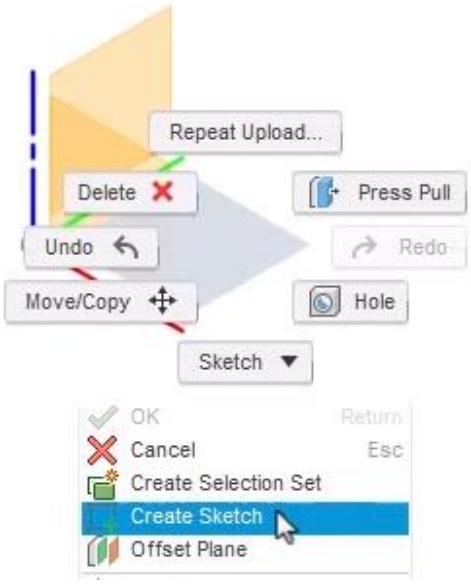


Figure 4. Note a different way to create a new sketch

5. A third way to create a sketch is by clicking the Toolbar's Create> Create Sketch.



Figure 5. Note a third way to create a new sketch

6. After clicking Create> Create Sketch, choose the plane or planar face you want to sketch on.

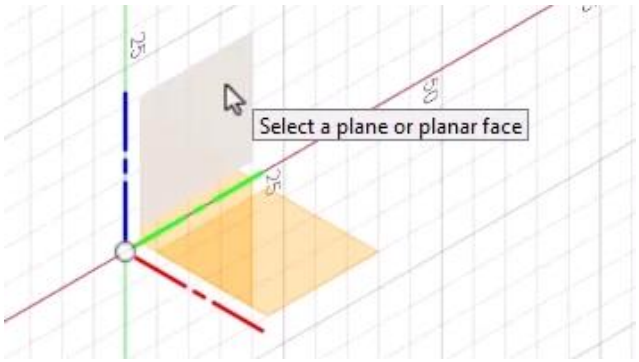


Figure 6. Choose the plane or face

7. A fourth way to create a sketch is to press one of the keyboard shortcuts for a sketch tool. For example, press L to open the Line tool and notice that you need to choose a plane to sketch on.

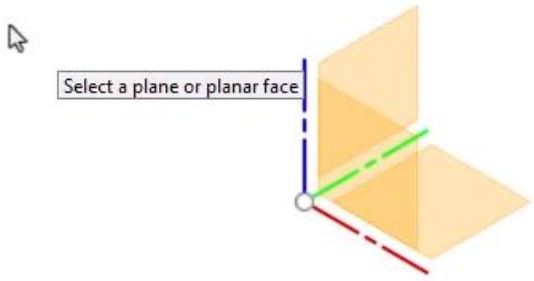


Figure 7. Note a fourth way to create a new sketch

8. Choose one of the methods to create a sketch on the XY plane.

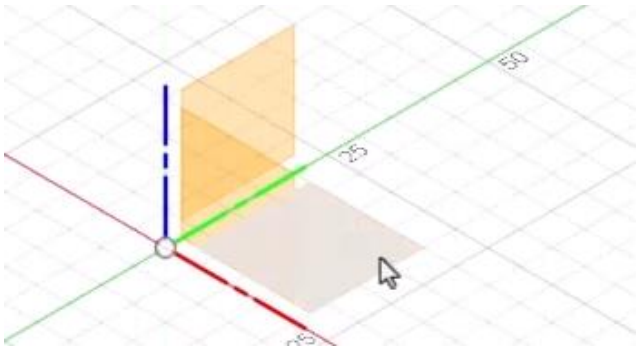


Figure 8. Create a sketch on the XY plane

9. The Sketch Palette dialog's Look At option allows you to return the camera to a position normal to the sketch plane. This helpful tool reorients you after you've rotated the sketch.

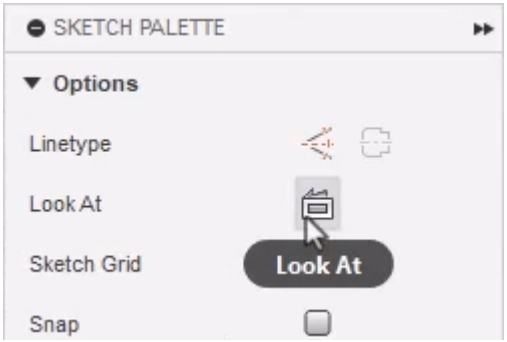


Figure 9. Note the Look At option

10. The Look At tool is also located in the Display and Settings bar at the bottom of the screen.

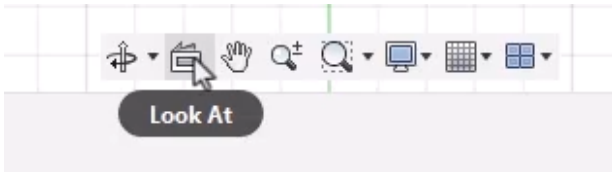


Figure 10. Note the Look At tool's alternate location

11. Click Create> 2-Point Rectangle.

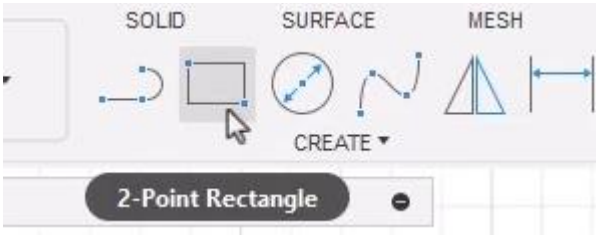


Figure 11. Open the Rectangle tool

12. You can use the Sketch Palette's options to customize the Rectangle tool. Choose the Center Rectangle option.

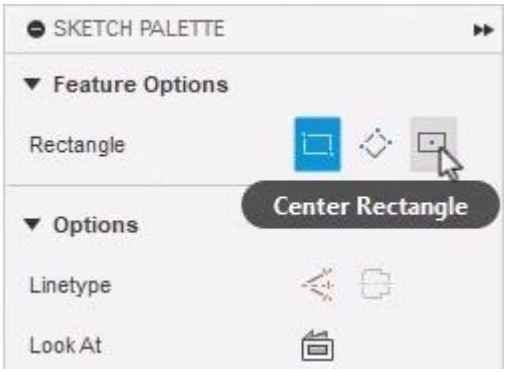


Figure 12. Explore the Rectangle tool's options

13. First, click at the sketch's origin, move the cursor, then click to place the rectangle's corner.

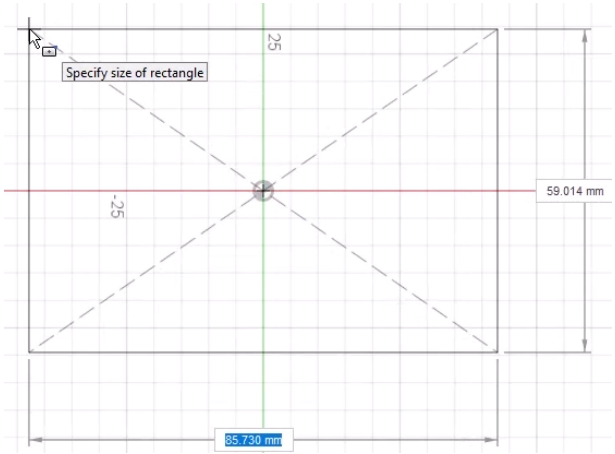


Figure 13. Draw a rectangle

14. To leave the Rectangle tool, press Esc or right-click in an open area and choose the OK option from the right-click menu.

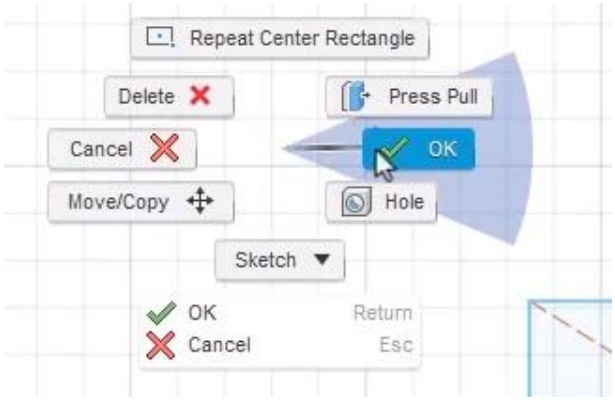


Figure 14. End the Rectangle tool

15. The rectangle's perimeter is blue, which indicates that the rectangle is not fully defined. Click and drag one of the rectangle's corners and notice that you can resize the rectangle. Fully defining a sketch entity will be covered later in this module.

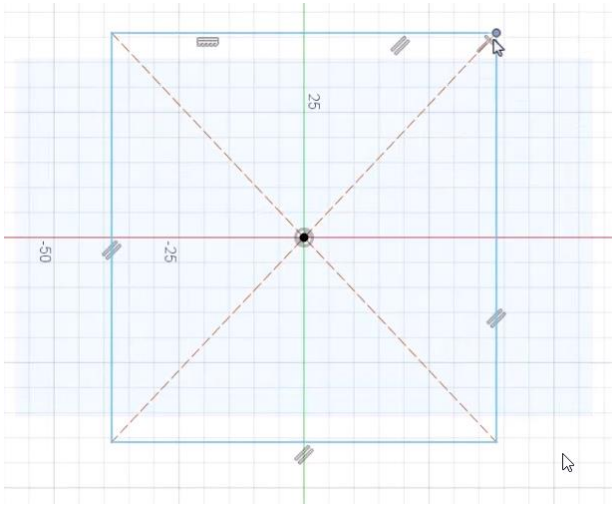


Figure 15. Notice the underdefined rectangle

16. To end the sketch, click Finish Sketch> Finish Sketch.



Figure 16. Finish the sketch

17. Now that the sketch is finished, notice that a sketch icon is added to the timeline at the bottom of the screen.

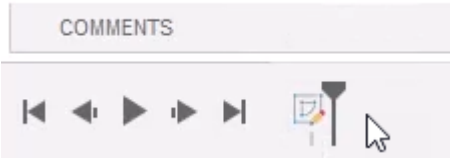


Figure 17. Inspect the timeline

18. Also notice that the sketch is added to the Browser's Sketches folder. The small pencil displayed next to the icon indicates that the sketch is underdefined.

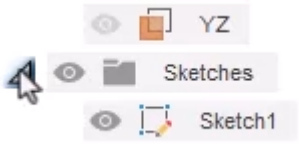


Figure 18. Inspect the Sketches folder

19. Double-click the timeline's sketch icon to edit the sketch. Once the sketch is open, click Create> Line to open the Line tool.



Figure 19. Edit the sketch

20. Click to place the line's endpoints and notice that you can continue to add to the line while the Line tool is still active.

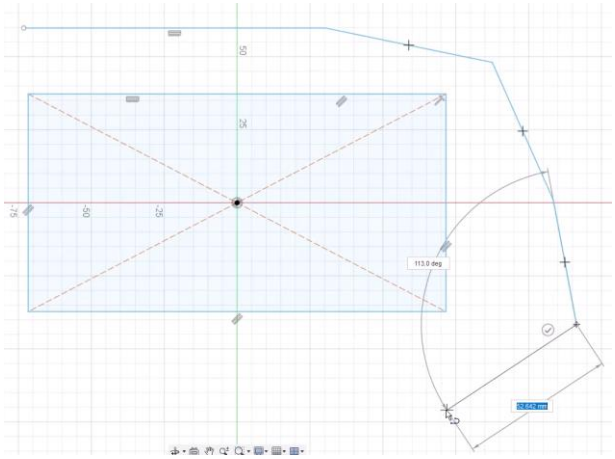


Figure 20. Draw line segments

21. You can change the Line tool from drawing straight line segments to drawing arcs. Hover your cursor over the most recent point you placed, hold the left mouse button, and notice that you are now drawing tangent arcs. After you release the mouse button, the arc is created and the tool toggles back to drawing straight lines. End the Line tool by pressing Esc.

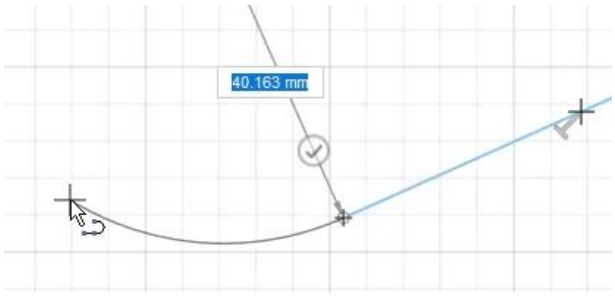


Figure 21. Toggle between arcs and straight lines

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22. Open the Circle tool by clicking Create> Circle> Center Diameter Circle.

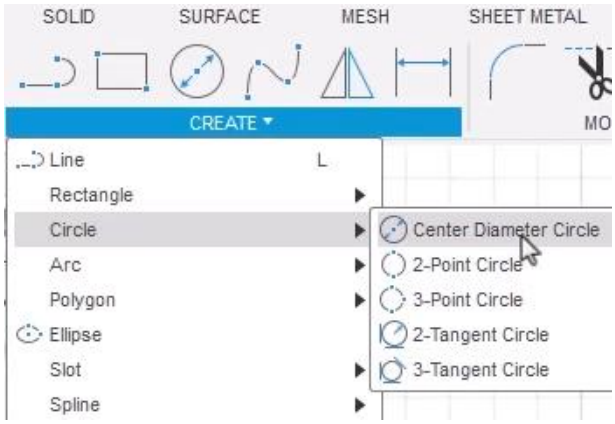


Figure 22. Open the Circle tool

23. Click the sketch's origin to place the circle's center point, then move the cursor and click to place the perimeter.

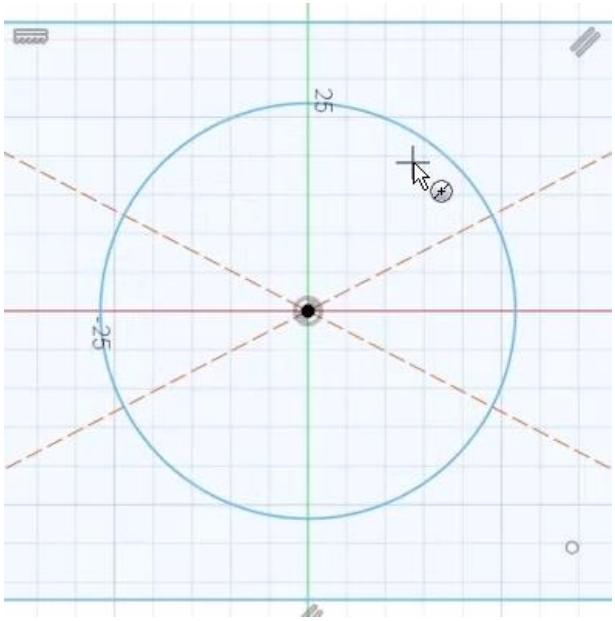


Figure 23. Draw a circle

24. Click Create> Circle> 3-Tangent Circle.

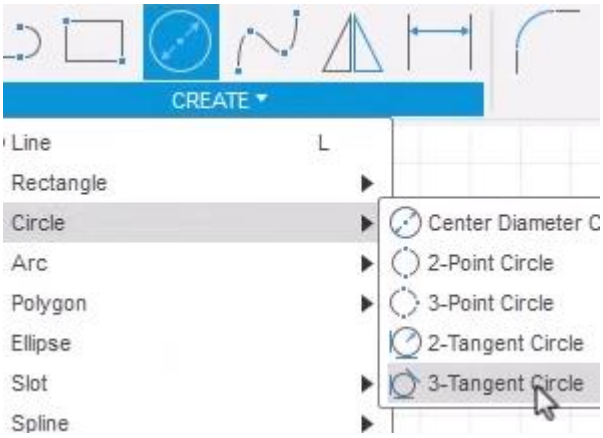


Figure 24. Open a different version of the Circle tool

25. Select three references and notice that a circle is created tangent to them. In the image on the right, three of the rectangle's edges were selected to create a circle tangent to them. Press Esc to leave the Circle tool.

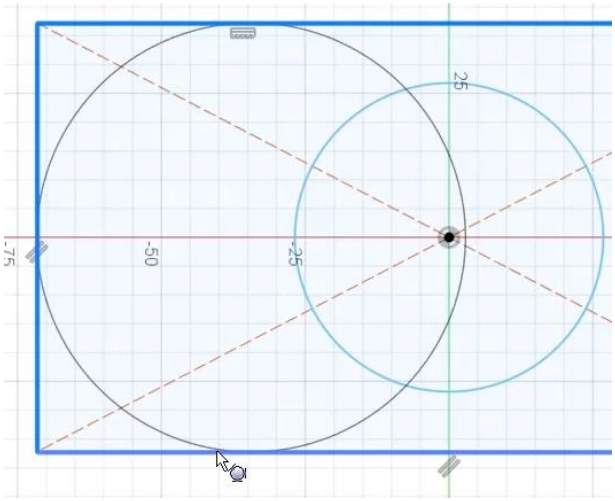


Figure 25. Create a circle

26. Click and drag one of the rectangle's corners and notice that the circle you just drew remains tangent to the rectangle's edges. However, the first circle does not automatically update unless you added constraints to it. Constraints will be covered in more detail in a future module.

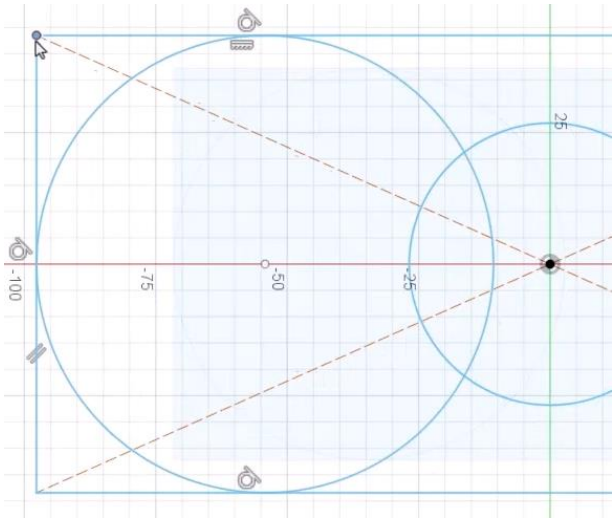


Figure 26. Adjust the rectangle's size

27. Finish the sketch by clicking Finish Sketch> Finish Sketch.



Figure 27. Finish the sketch

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28. Hide Sketch1 by clicking the eyeball icon next to it.

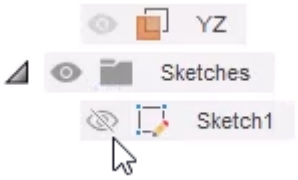


Figure 28. Hide Sketch1

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29. Use one of the methods you learned earlier in this module to create a new sketch on the XZ plane.

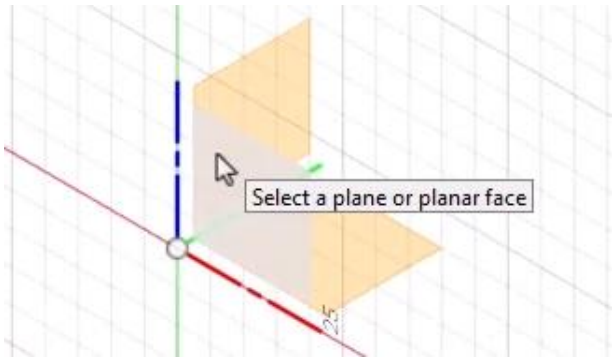


Figure 29. Create a new sketch

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30. Click Create> Center Diameter Circle.

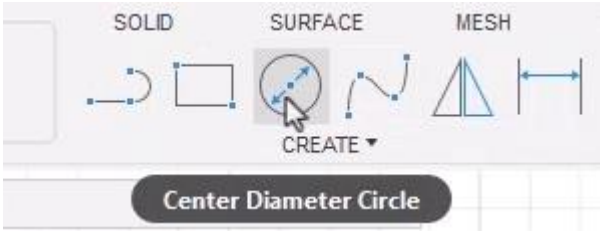


Figure 30. Open the Circle tool

31. Click to place the circle's center at the sketch's origin. Move the cursor to begin drawing a circle but do not click to place the circle's edge. Enter **100** into the dimension box, then press Enter.

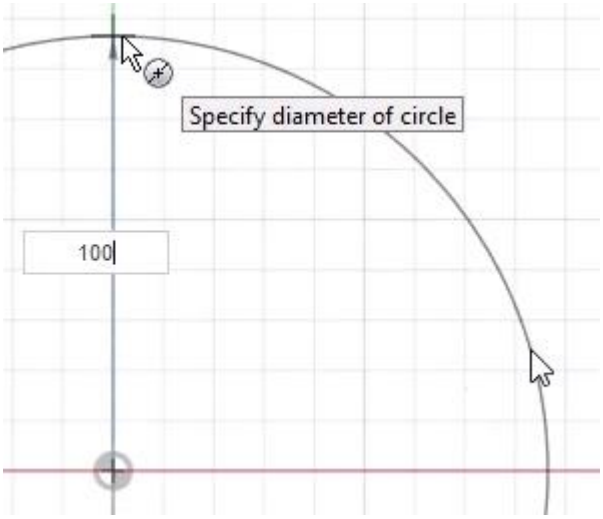


Figure 31. Draw a 100 mm circle

32. Notice the circle's perimeter is black, which indicates that the circle is fully defined. Finish the sketch by clicking Finish Sketch> Finish Sketch.

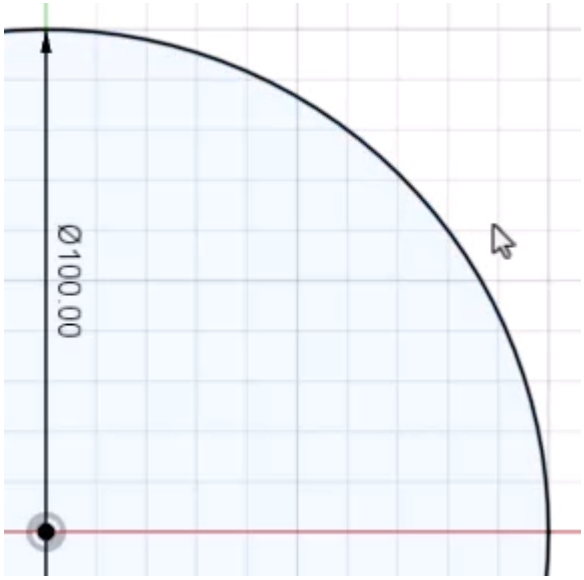


Figure 32. Notice the circle's black edge

33. The Browser's sketch icon has a red lock next to it to indicate that the sketch is fully defined. Click the new sketch's eyeball icon to hide it.

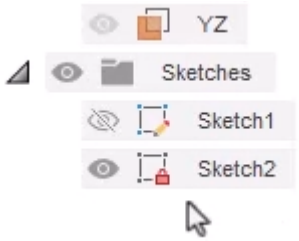


Figure 33. Inspect the Browser and hide the sketch

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34. Create a new sketch on the XZ plane, then click Create> Slot> Center Point Slot.

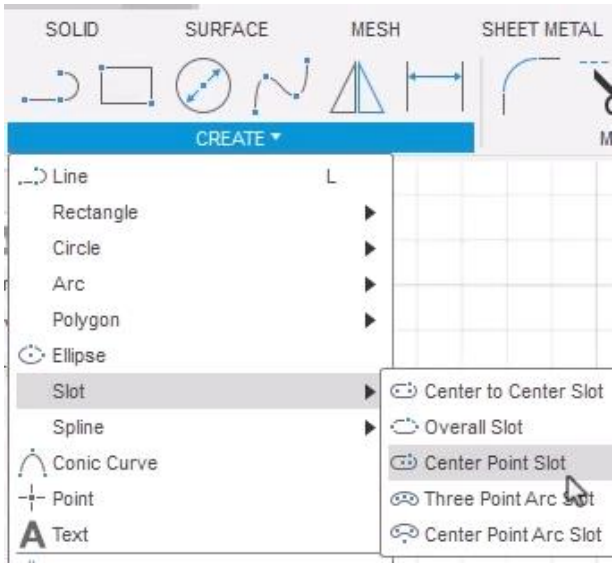


Figure 34. Open the Center Point Slot tool

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35. Click to place the slot's center at the sketch's origin, then click a second time to determine the slot's length.

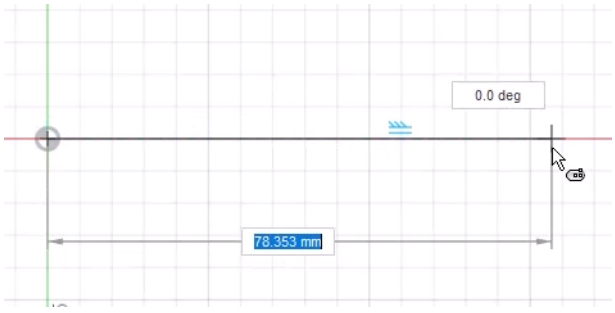


Figure 35. Begin drawing the slot

36. Click a third time to determine the slot's height.

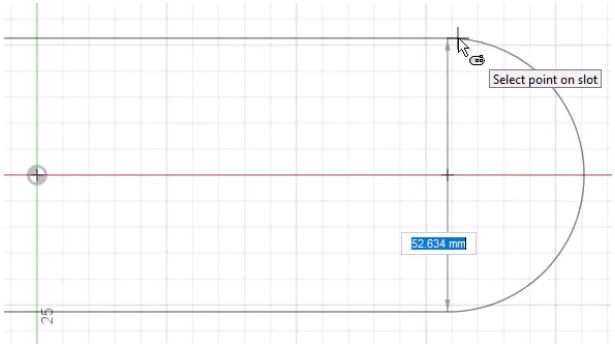


Figure 36. Finish drawing the slot

37. Notice that Fusion automatically adds tangent constraints between the slot's straight edges and curved arcs. Regardless of how you modify the slot, the arcs will always stay tangent to the straight edges. Also notice that a horizontal constraint is added to the slot's dashed centerline. Press Esc to leave the Slot tool.

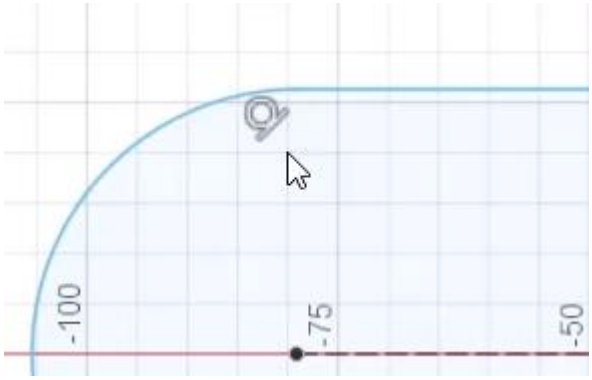


Figure 37. Note the constraints that are automatically applied

38. The slot's blue edges indicate that it is underdefined. You can click and drag the slot's points to resize the sketch entity. Finish the sketch by clicking Finish Sketch> Finish Sketch. Continue to explore creating sketches and playing with various sketch entities. It is especially important to understand how to work with lines, circles, and rectangles because these will be the foundations for most designs.

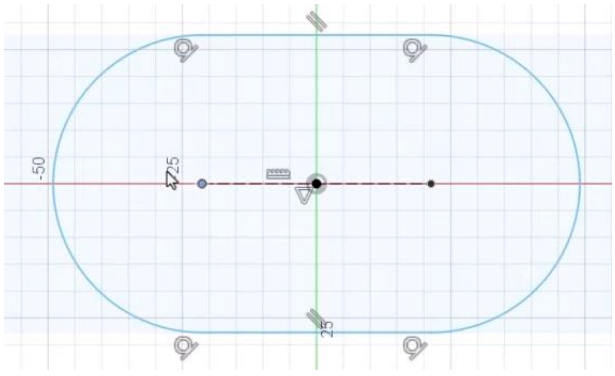


Figure 38. Notice the slot is underdefined